FINAL PROJECT YEAR - RA.141581

MALANG OPTIMAL SCHOOL: ARCHITECTURE MEET EDUCATION

ADE IMELDA WIGUNA BR PURBA
3212100036

TUTOR:
DR. ING. IR. BAMBANG SOEMARDIONO

UNDERGRADUATE PROGRAM
DEPARTMENT OF ARCHITECTURE
FACULTY OF CIVIL ENGINEERING AND PLANNING
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LAPORAN TUGAS AKHIR - RA.141581

SEKOLAH OPTIMAL MALANG: ARSITEKTUR DAN PENDIDIKAN

ADE IMELDA WIGUNA BR PURBA
3212100036

DOSEN PEMBIMBING:
DR. ING. IR. BAMBANG SOEMARDIONO

PROGRAM SARJANA
JURUSAN ARSITEKTUR
FAKULTAS TEKNIK SIPIL DAN PERENCANAAN
INSTITUT TEKNOLOGI SEPULUH NOPEMBER
SURABAYA
2016

APPROVAL

MALANG OPTIMAL SCHOOL:
ARCHITECTURE MEET EDUCATION

Written by:

ADE IMELDA WIGUNA BR PURBA
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Has been defended and approved
by the examiner team of Final Project RA. 1415181
Architecture Department Faculty of Civil Engineering and Planning–ITS
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STATEMENT OF ORIGINALITY

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Final Project Title : Malang Optimal School: Architecture Meet Education

Period : Second Semester Year 2014/ 2015

Herby certify that the final project that I created is the result of my own work and actually done by myself (original), is not a mere duplication of the work of others. If I do a plagiarism of the work of the student / others, then I am willing to accept the academic sanctions to be imposed by the Department of Architecture FTSP - ITS.

Thus Statement I created with full consciousness and will be used as a requirement to complete the final project RA.141581

Surabaya, 2016, June 13th

Assigned

Ade Imelda Wiguna BR Purba

NRP. 3212100036

ABSTRACT

Malang Optimal School:
Architecture Meet Education

Written by:
Ade Imelda Wiguna Br Purba
3212100036

Education landscape has changed significantly in the last fifteen years. Nowadays, schools should provide an effective education, education with flexible and creative space, education by building responsive to technology. Schools and universities were largely shaped by the strength of the faculty in the school environment, and their ability to deliver lessons in a fun and flexible. This creates new challenges in pushing the design education in schools today.

Then what about the Condition in Indonesia? Most of our school are still using the educational conventional system. This may be tha cause of crisis state that happening in our country. That architecture is missing when developped the school's building. Architecture should meet education and make the advance learning in school's environment.

The Final project is called Malang Optimal School. Same with the name, this building is generated the way how to optimize the student learning process, combined with the fun pleasing ambience. Design method used is collecting the data which related schools toward design that answers the problems. Data is being analyzed and it is added with case study examples of similar literature. So those, the final attainment can give a clear design of object.

Keyword : Education, Optimal, School

ABSTRAK

Malang Optimal School:
Architecture Meet Education

Ditulis oleh:
Ade Imelda Wiguna Br Purba
3212100036

Lanskap pendidikan telah berubah secara signifikan dalam lima belas tahun terakhir. Dewasa ini, sekolah dituntut untuk mengemban tanggung jawab dalam memberikan pendidikan efektif,pendidikan fleksibel - kreatif, serta pendidikan yang responsif terhadap teknologi.

Sekolah sudah seharusnya dapat memaksimalkan lingkungan sekolah yang ada, mengolahnya untuk memberikan pelajaran menyenangkan dan fleksibel kepada para murid.Hal ini menciptakan tantangan baru dalam mendorong dan mengembangkan desain bangunan sekolah saat ini.

Lalu, bagaimana dengan kondisi sekolah di Indonesia?
Sebagian besar sekolah masih menggunakan sistem konvensional pendidikan. Ini adalah salah satu penyebab krisis pendidikan di negara kita. Aspek Arsitektur tidak bolej hilang ketika mengembangkan desain sekolah. Arsitektur harus mampu memenuhi konsep pendidikan yang nyaman dan membuat pembelajaran menjadi optimal untuk ditangkap oleh para murid di lingkungan sekolah.

Proyek Tugas Akhir ini berjudul Malang Optimal School. Sama dengan namanya, bangunan ini diharapkan mampu mengoptimalkan proses belajar siswa, dikombinasikan dengan suasana yang menyenangkan. Metode desain yang digunakan adalah mengumpulkan data terkait desain sekolah yang mampu menjawab permasalahan yang ada.Data tersebut dianalisis juga dikaitkan dengan contoh studi kasus serupa. Pencapaian akhir dari tugas ini ialah ketika dapat memberikan desain yang jelas dari isu objek tersebut.

Kata kunci : Pendidikan, Optimal, Sekolah

PREFACE

Praise and great gratitude submitted to Almighty God, who always gives His gracious mercy and tremendous blessing that has helped the writer finishing this script entitled: "Malang Optimal School: Architecture Meet Education". This script is as a requirement in accomplishing the S-1 Degree at Architecture Department Faculty of Civil Engineering and Planning–ITS.

It is a great opportunity for me to write this subject. At the time of preparing this term paper I am gone through different books and websites which help me to get acquainted with new topics. I am actually focusing on those topics which are important for us to understand about this subject easily.

The writer would like to thank to all of those who have given the contribution so that this script can be finished. The writer would like to deliver this thank to:

1. Ir. I Gusti Ngurah Antaryama, Ph.D as a lecturer coordinator task subjects Architecture Final Project.
2. Dr. Ing. Ir. Bambang Soemardiono, as a supervisor who has always been sincere and helpful giving advice and valuable input to the ongoing improvement in the completion of this final project report.
3. Defry Agatha Ardianta, ST., MT., Rabbani Kharismawan, ST., MT., and Ir. Hari Purnomo M.Sc as the examiner who has conducted guidance, direction, criticisms and suggestions are useful for Preview Final Project.
4. The greatest thanks and appreciation dedicated to the writer's parents. They always give the writer pray, encourage, , spirit, motivation and patience to the writer during finishing this script.
5. Sincere thanks to my sister and brother, Rejoice Catherine Purba and Mitsu Purba , for becoming the writer's motivation in finishing this study on time.
6. My beloved big family of Architecture Department 2012, especially for Gisela Titania, Lidya Kartika, Nurul Fauzia, Putu Krisna Y, Riama Anna V S, Rr. Windya Putri, Wenda Pristi. Thanks for being such a great companion and the writer's history during study in Sepuluh Nopember Institute of Technology.

I have tried hard and soul to gather all relevant documents regarding this subject. I don't know how far I am able to do that furthermore. I don't claim all the information

in this term paper is included perfectly. There may be shortcoming, factual error, mistaken opinion which is all mines a volume in future.

Apart from me this term paper will certainly be immense importance for those who are interesting to know about this subject. I hope they will find it comprehensible.

Surabaya, 2016, July 13th

The writer,
Imelda Purba

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CHAPTER 1: INTRODUCTION

1.1 Background

“Indonesian‟s Education is in a crucial state” Said Anies Baswedan, Minister of Education and Culture. (01/12/2015) “

Anies Baswedan said that statement when read his education review report at the meeting of the Ministry Of Education And Culture. From the amount of Ministry Of Education And Culture (*Kemndikbud)* data, in recent years, the quality of education in Indonesia showed in poor results.

The Worlds' Education report:

- Report by HDI (Human Development Index) in 2003 showed that Indonesia was ranked 112th (0.682) of 175 countries. Indonesia's position is far below other neighboring countries in the ASEAN region.
- Indonesia was ranked 40 out of 40 countries, the rank of the quality of education, according to The Learning Curve institutions.
- Education of Indonesia was ranked as 64 out of 65 countries issued by the institute Programme for International Study Assessment (PISA), in 2012.
- Indonesia, also ranked 103 in the world, education world country colored by bribery and extortion. During two months, the rate of violence involving students in and outside of school in Indonesia reaches 230 cases. Organized crime in education in Indonesia is ranked 109th in the world.

The above data clearly shows the lack of quality of education in our country.

Indonesia has an arduous task to elaborate this education quality. Because education is an important agenda in the implementation of the country‟s program. It is the key of nation to achieve the future prosperity.

The main objectives of this education exploration brings a new concept of Towards School. School is one of education resources that capable of improving the quality of human life. when the school has a good quality then it will support the optimal education. The optimal educational attainment is needed to answer the country's development on a national scale.

Figure 1.1.1 atudy atmosphere in the classroom
source: wordpress.com

1.2 DESIGN ISSUES AND CONTEXT

1.2.1 DESIGN CONTEXT

Education defines an essential for human survival. This is because education is a sector that can create human intelligence to carry out the work. Then for this important function, how to achieve the best optimal education?

There are many factors that affecting the education. And all the re-education sector needs to be explored. We could not just discuss about the curriculum that should be held but also the building that accommodates the passage of educational activities. Building or architecture sector has a great role in creating the good environment in school. This called reciprocal system.

Student learns in different ways, and the physical environment of the school should reflect this characteristic. Physical environment should relates to and can support the learning process. A well designed environment can help stimulate and support teaching, whereas a poorly designed school can inhibit learning

The building is tool for the teacher and an expression of the school education‟s approach, by creating an atmosphere, a mood to, to and the student in every learning task set before him. By making the school a place the student looks forward to entering and one he regrets leaving
(*Perkins 1957, p.62*)

1.2.2 DESIGN ISSUES

Design issues in this topic is about the school failure in developing the potency of human resources‟ quality in Indonesia.

After read some data, I found that there are many factors which may cause the failure of education in Indonesia. But this time i try to point out the issues that concerned about the point of school‟s learning way “a direction that less restrictive”. School considered to be only as one instruction course, **“the teacher instructions”**. There are no two way discussions between the teacher and the students. This is one case that causes the student tend to be constrained by teacher and the schools‟ existing rule. It seems like they could not explore them selves in school. School is only a formality, they are not with their own desire to explore their abilities.

So if it is concluded the factors that causes the minimum quality potential in our education system, some are they are:

- Learning only from textbooks
- One direction teaching process
- Lack of learning facilities
- Teachers do not embed two-way discussion
- Culture of cheating
- Binding the school rules

This issue must be resolved with a new change in our education life.

Figure I.2.2.1Teacher illustration in classroom
source:illustme.com

"*You cannot solve a problem from the same consciousness that created it. You must learn to see the world a new*."
Albert Einstein

1.3 DESIGN PROBLEM AND CRITERIA

1.3.1 PROBLEM

The goals of designing this final project is to bringing the comfortable atmosphere of school spaces. Where this comfortable concept would fulfill the needs of children who want to explore themselves.

Students will get relax and able to optimize their learning ability in school. The interior and exterior space will create a good mood to the students. Fun and enjoyment space concept will be enhanced in this school

The design creates the student freedom concept, however it will keep them up to expand their knowledge and enhance their ethics and characters in school.

This school will also object to enrich the community who want to visit the school on a particular time and place in some corner of school. This will reach the surrounding community.

Other possibilities events are learning atmosphere can be felt by the visitors and it can stimulus others to keep studying.

Figure 1.3.1.1 Student"s get active in class
source: news.wics.edu

1.3.2 DESIGN CRITERIA

Education landscape has changed significantly in the last fifteen years. Nowadays, schools should provide an effective education, education with flexible and creative space, education by building responsive to technology. Schools and universities were largely shaped by the strength of the faculty in the school environment, and their ability to deliver lessons in a fun and flexible. This creates new challenges in pushing the design education in schools today.

Effective education is an education that allows learners to learn easy, fun and achievable objectives as expected.

Fun and creative education is an education that gives children the opportunity to be creative and free to do the learning process in any way. Pupils tend to not be restrained, because basically the human thinking can not be directed. It is this understanding which is missing in the learning process in schools Indonesia.

Responsive education technology education is aware that humans now live in a time connected world where students have access to an unattainable to find all the educational content as well as a variety of ways to explore, learn and interact online requires advanced technology.

To optimize the learning process in the school, school design idea of this program is **Flexible learning space**. They can feel comfortable learning anywhere and optimize their learning (In the classroom, in the school garden, in the library, in the corridors of the school, in the school cafeteria).

Other content in school is school environmental learning. Learning directly on nature and the environment will help

the process of creativity of students. Design the **Eco-School** where application of science and technology in buildings can be studied directly by students, and the building feels like a living laboratory. Conserving energy, water management, and other building green technology would be applied.

Schools and universities were largely shaped by the strength of the faculty in the school environment, and their ability to deliver lessons in a fun and flexible. This creates new challenges in pushing the design education in schools today.

After reading some of school‟s and education literature, it acquired some school design criteria that can optimize the learning process of student.

1. The design should be able to **optimize the student's learning activity** and **educate their character** in school

2. The design should be able to generate the entire school as a learning place **"Flexible learning place"**

3. The design should be a representation of **"Pleasing School"** that creates **imagination and creativity environment.**

4. The design should be a representation as a **Safety and secure Environment** for the students.

5. The design should apply the **Eco-School characteristic,** so that the student can learn and experiencing the green concept building directly.

6. The design should be state as a **community center** that can be use temporary, enriching the community surround the site.

"Education is the main powerful we can use to change the world."
Nelson Mandela

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CHAPER II:
DESIGN PROGRAM

2.1 SITE DESCRIPTION

Location
The school will be located in Villa Puncak Tidar Housing, Malang.

The Site Areas
Land Area: 9000 M2
BCR (Building Coverage Ratio)
60% = 5400 M2
FAR (Floor Area Ration)
N: 1,2 = 6480
Floor Level Buildings:
3 Level

Figure 2.1.1 The Site
source : googlemaps.com




Figure 2.1.2 Neighborhood condition around the site
source : Private Document

SITE INFORMATION

Villa Puncak Tidar Housing is one of the exclusive housing area which is still fairly new. It is not as crowded as other areas and it is a potential area to be developed soon. Schools will be placed in this housing in order to reduce the noise and hustle of the city.

Potential of view the natural beauty of the mountains hills Malang city can also be felt on the housing site located in the highland city of Malang.

Moreover, cool and fresh climatic conditions will support the school activities.

The location is positioned only 10 minutes from the Ijen street (major street in Malang) and supported two driveway access to the location from Dieng and Tidar Street .

The Security system is pretty save in the housing patrolled by security guards (security service).

Land Boundaries

The site has neighborhood boundaries, as follows:

• North: Villa Puncak Tidar Street and Ma-Chung University
• South: Housing and vacant land
• East: Villa Puncak Tidar street, housing, and vacant land
• West: Housing and vacant land

The Land

The Land in the western part of the city of Malang is an undulating plateau and tend to be contoured. For vegetation, On site there are no large existing vegetation, there is only grass, shrubs.

The Infrastructure

In the northern and eastern areas of land there are two access roads that large enough (each 8 m) with garden limiting therein (2m). So the total circulation before the land is about 18 m.

The Access

For the circulation of public transport there is no special lane that pass in front of the land, but actually the general public transportation is going through not far away from the site.

The Climate

Malang climatic conditions during 2008 recorded an average temperature ranges between 22.7 ° C - 25.1 ° C. While the maximum temperature reached 32.7 ° C and a minimum temperature of 18.4 ° C. Average air humidity ranging from 79% - 86%. With a maximum moisture content of 99% and a minimum of 40%. Like most other areas in Indonesia, Malang following the second round of climate change, the rainy season and dry season.

Building Orientation

The longest side of the building facing the wind directions northeast and southwest Forms site itself has reduced the direct meeting with the direction of the sun's heat directly.

The view

Figure 2.1.3 View to the site
source : googlemaps.com

View into the site

- View A (+) : A is the part of the entrance of the housing. So that is certainly passage A is the most often passed by visitors. So the view from this passage is the most strategic.
- View B(+) (C+) : B and C are the part closest to the building. It provides the strategic view from the site.
- View D(+) : D provides the good view into the building.

Figure 2.1.4 View to the site
source : googlemaps.com

View out the site

- View E (+) G(+) is the view towards housing.

View F (+) is the best view out the site because it is the part of the main access.

- View H (+) is the view towards Ma-Chung University.

Potential Site

- Malang is a city called *Tri Bina Cita* (City of Education). Representative Area
- Malang is city of Industry and Tourism City. Many tourism center that can be extracted and be supporting sector education area.
- Villa Puncak Tidar is still quite a new housing, it is not as crowded as other areas. This school will be placed here, in order to reduce the noise and hustle of the city.
- This site has many Potential views that given the city natural beauty of the Malang‟s mountains and hills.
- Moreover, climatic conditions of cool and fresh temperature will support the school activities

Figure 2.2.2 Schools environment
source :Treassure.com

2.2 FACILITIES AND ROOM PROGRAMMING

The space provided at this school is a space reserved for high school students.

Mark Dudek, in the book **Architecture of Schools,** says that the Senior High School Students are 15-18 year olds who have an attitude of independent, mature, and liked to look at the outside atmosphere (Outward looking). They feel if they were forced to learn and too restrained, it will clog their creative thinking. By then, this school will create an atmosphere where learning space that is comfortable and enjoyable for the students. Free atmosphere is created so that students can actively create and optimize the learning process. Mark Dudek said it obtained the first principle of free school acquire a different class with the usual classroom, classrooms will be formed larger and has its own standard (spatial movement).

Program facilities and space here customize by high school‟s student usual learning, playing, working, studying and home activities.

Dr. Kenn Fisher, Associate Professor in Learning Environments in University of Melbourne, in his education research mention that the configuration room that needed in school are:

- Individual (student home base, individual pod- place to think and reflect)
- Group (collaboration incubator, presentation & display spaces)
- Activity-rich (project space, wet areas, specialised focus laboratory)
- Informal (outdoor learning, 'break out' spaces')
- Staff settings (teacher meeting, resources, supply, store)

Room and faciities			capacity	Area	Unit	Total Area
Students Area						
individual	Individual pod		1	5m2/ ppl	4	20m2
	Student home base (student‟s lounge)		5	3m2/ppl	2	30m2
Group	Collaboration incubator		8	4 m2/ppl	2	64m2
	Presentation room		24	81m2	12	972m2
Activity-rich	Project space		8	4m2/ppl	2	64m2
	Specialized focus laboratory	Science laboratory	24	85m2	4	340m2
		Art Studio	24	160m2	1	160m2
		Technology Studio	24	180m2	2	360m2
		Green House		120m2	1	120m2
		Water treatment Area		60m2	1	60m2
	Informal	Outdoor learning	6	25m2	4	100m2
		Green Amphitheater	25	3m2/ppl	1	75m2
Supporting activity	Physical exercise courtyard					420m2
	Library					140m2
	Worship room					48m2
	Cafeteria					250m2
	Exhibition hall					300m2
						3,423 M2

Graph 2.2.1 Student‟s Room programming

Teacher's setting					
Teacher meeting			54m2	1	54m2
Teacher resources	35	4m2/ppl	144m2	1	144m2
Principals room	1	4m2/ppl	15m2	2	30m2
Administration room	3	4m2/ppl		1	12m2
Teacher‟s consultation room	3	4m2/ppl		1	12m2
					203m2

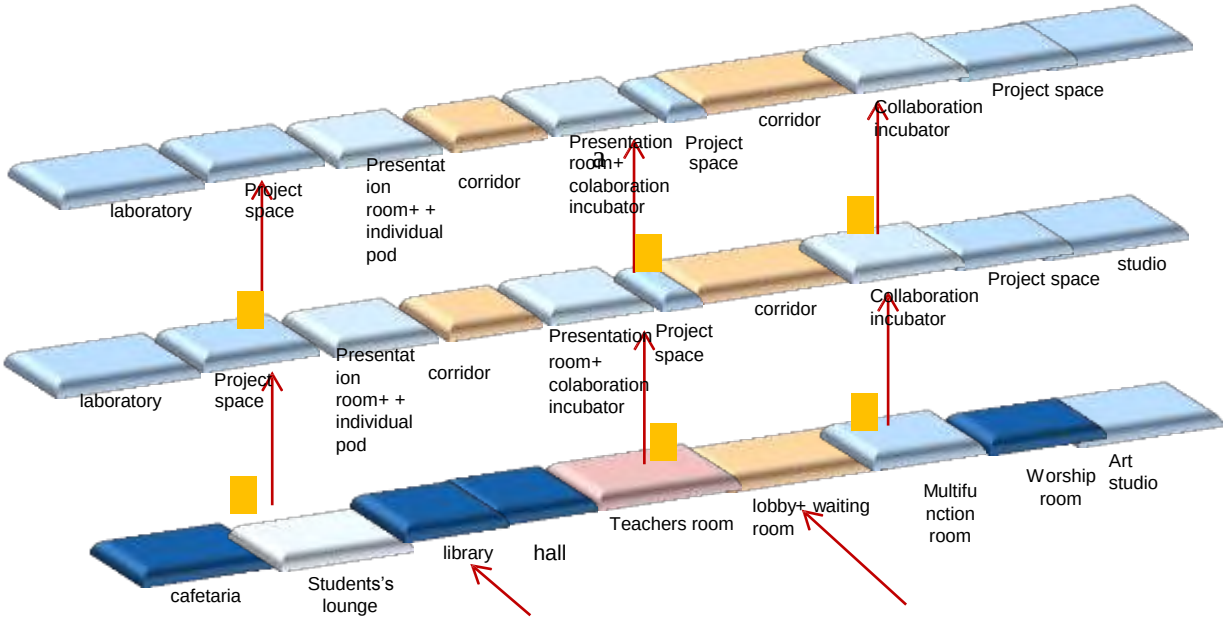
Graph 2.2.2 Teacher's Room Programming

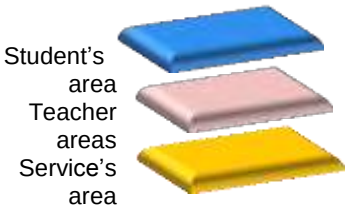
Service Area					
Lobby + waiting room		35	4m2/ppl	1	140m2
Monitoring room		4	4m2/ppl	1	16m2
Medical room		4	5m2/ppl	1	20m2
MEP + genset room		6		1	287m2
Janitor		2	2,5m2/ppl	1	5m2
Kitchen‟s pantry		3	4m2/ppl	1	12m2
Teacher‟s Toilet		2	3m2/ppl	1	6m2
Student‟s Toilet		4	3m2/ppl	6	72m2
Storage room		3	2m2/ppl	1	6m2
Security		1	2m2/ppl	2	4m2
Parking Area	car				720m2
	motorcycle				120m2
					1508m2

Graph 2.2.3 Services 's Room Programming

Student‟s Area	3423m2
Teacher‟s Area	203
Staff Service‟s Area	1508 m2
Circulation 30%	1480
TOTAL AREA	6414

Graph 2.2.4 Tot al Room Programming





Graph 2.2.5 Room Programming and relationshop

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CHAPER III: Design Approach & Method

3.1 Design Approach

Student learns in different ways, and the physical environment of the school should reflect this characteristic. Physical environment should relates to and can support the learning process. A well designed environment can help stimulate and support teaching, whereas a poorly designed school can inhibit learning

How can designers create the perfect learning environment? It is nearly impossible to provide a generic and accurate answer to this question because learning environments are designed to suite or support particular learning theories – and there are many theories that explain the learning process. Then this design is trying to combine the data from research reports about school optimal design.

Now is the time to focus on how our facilities can support and enhance the sophisticated range of student learning activity in schools. Building Futures provides the conceptual framework to ensure the educational needs of every student inform the development of school infrastructure. The schools we design must: Promote individualized learning; Create settings for innovative teaching; Realize the potential that new technologies can bring learning; Be environmentally sustainable and responsible; and Support community engagement.

Architecture: Behaviour Setting

Talking about architecture in designing the world of education can not be separated from the behavior of academics and students themselves. Both have ideas, habits, experiences, rules that all it wants to be accommodated in school buildings (Participatory design). That requires the setting of user behavior approach the school‟s building

Approach behavior setting is where the architectural form of human behavior, activity and space that can accommodate such activities.

Aspects observed in this approach are: User, setting characteristics, Behavior (stimulus, response, adaptation), activity patterns

Research Result:
Architecture and Schools

Design approach is also assisted by some school theory in the book Architecture of Schools by Mark Dudek who dissected the principle of schools in order to increase the quality of education.

Towards Future Develop Design of Schools

- Educational needs changing: Information, communication, technology (Transform classroom)
- Primary function of school: Structure and organize a complex community
- To create environments which optimize learning
- Cabling Technology (access and security are controlled)
- Extend community life (parenting class for the evening, classroom facility for weekend program)
- Schools contemporary community Centre
- Local authority project: landscape architect, School manager (Ground improvement)

Education Reformation

Moreover we can reflect on the application of the model of school education in Finland. Finland is the country with the best quality of education in the world. Pasi Sahlberg, Director of International Mobility, the Finnish National Education Ministry has written a book about the success of the Finnish education system entitled Finnish Lessons: **What Can the World Learn from Educational Change in Finland.** In the book Sahlberg writes that there are some unique fata on school education system of Finland, among others:

1. The school did not foster a sense of student competition but rather a sense of cooperation.
2. Schools rarely leave home assignment and no national exams
3. Curriculum Flexible learning in school
4. Teachers have a great responsibility

It turned out to be re-examined after the education system in Finland is similar to the thinking of Ki Hajar Dewantar, the National Education Leaders Indonesia.

Ki Hajar Dewantara formulate the notion of education as follows:

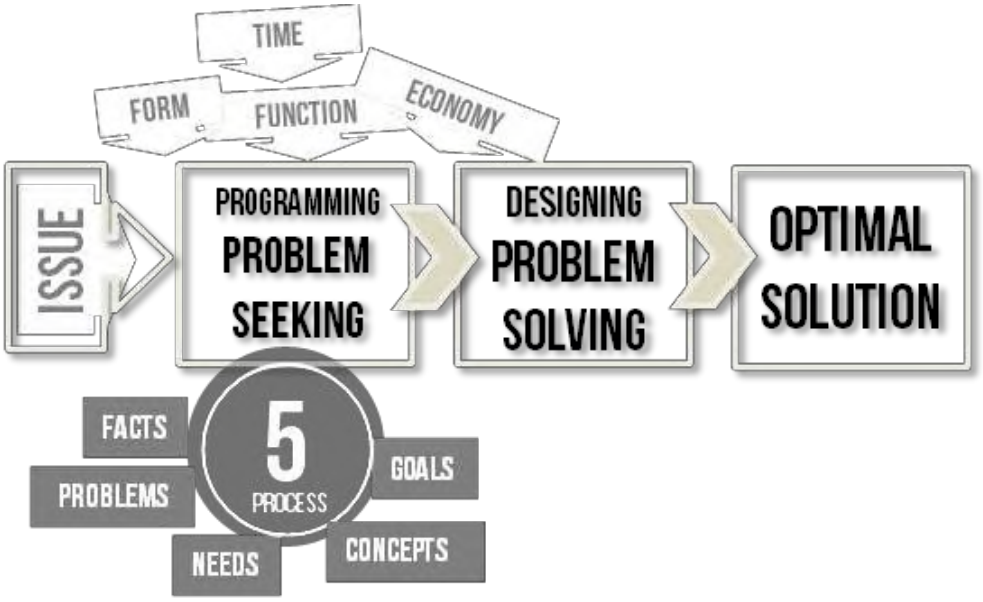
"Education generally means in its power to promote the growth of morality (inner strength, character), mind (intellect and the body of the child); in ***Taman Siswa*** *should not be isolated parts of it so that we advance the perfection of life, life, life and livelihood of our children who are students, in tune with his world* "
(Ki Hajar Dewantara, 1977: 14)

3.2 Design Method

The design method used in the design of this school is the method of "**Programming and Designing**" by William M. Peña and Steven A. Parshall (1969). Pena and Parshall revealed that, "Programming is a process toward a statement of architectural problems and requirements that must be met in offering a solution". They describe programming as "Problem seeking" and designs as "problem solving.“

Parshall Pena and clearly separates the programming and design process. Both are a different process, and requires a different attitude, even different abilities. Architects instrumental in doing both at once, both seek to analyze the problem (Programming) and find its solution (Designing). Sometimes the problem of architecture is not only about the science of architecture, but also to do with the other science fields. Here architects are required to know, understand and be able to finish.

Problem seeking is a valid approach to design, and solutions are needed in response to future problems. Therefore the problem should really be explored, in order to find the right design solutions. Penna methods provide sufficient understanding, clarifying, understanding and stating the problem buildings.



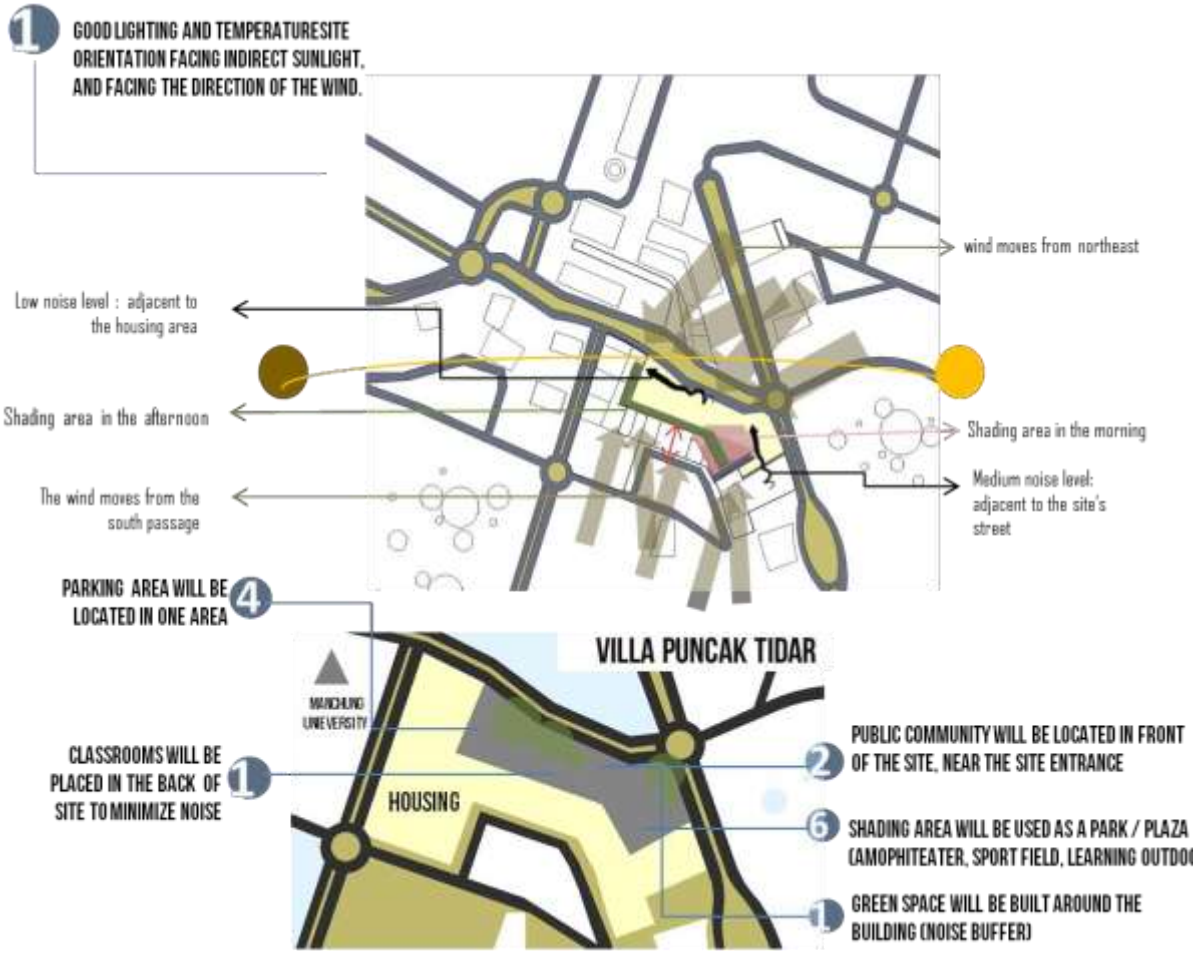
Graph 3.2.1William Penna Design of Method

CHAPER 4: Design Concept

4.1 Formal Exploration Concept

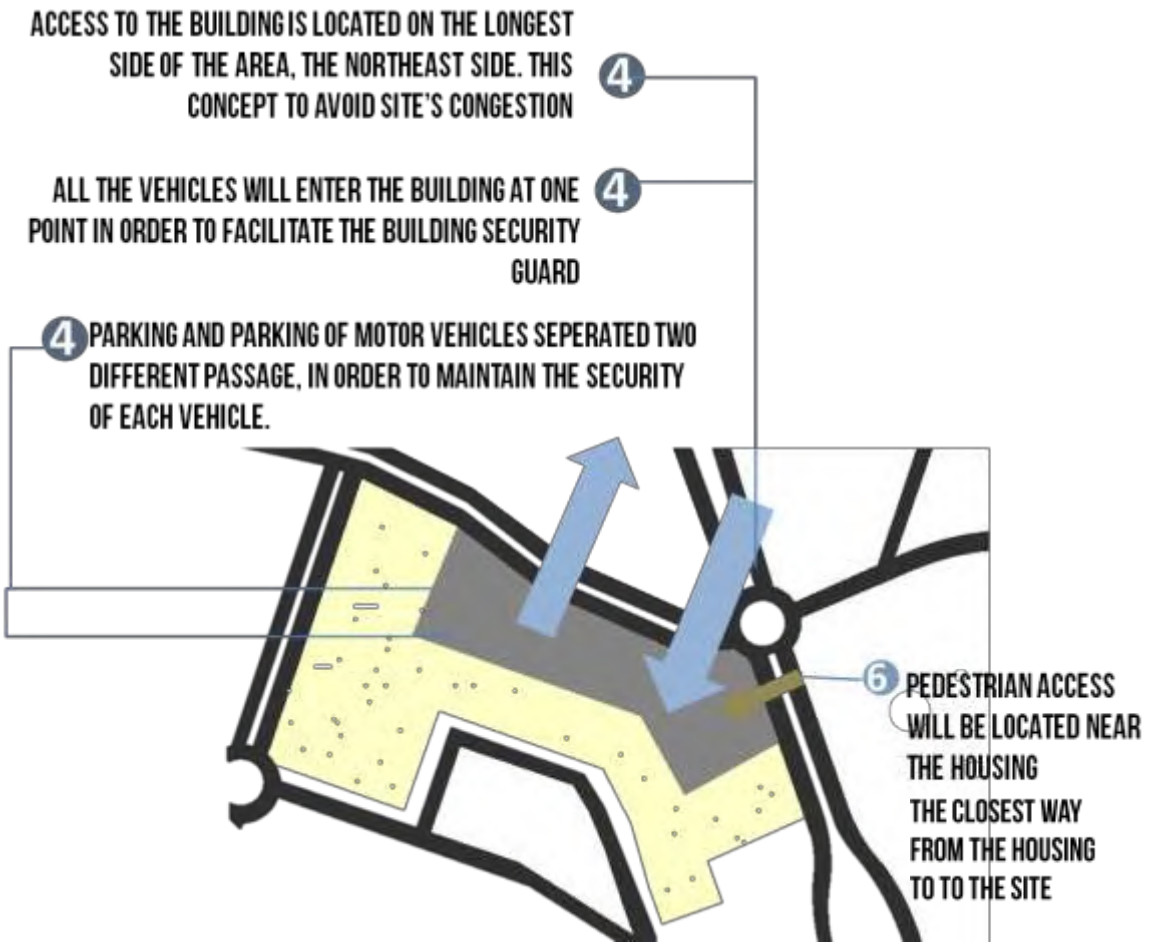
Site Concept

Tread located on 10,000 m2 of land, the site will be processed in a way of zoning outside and inside which will be used according to the needs of the school



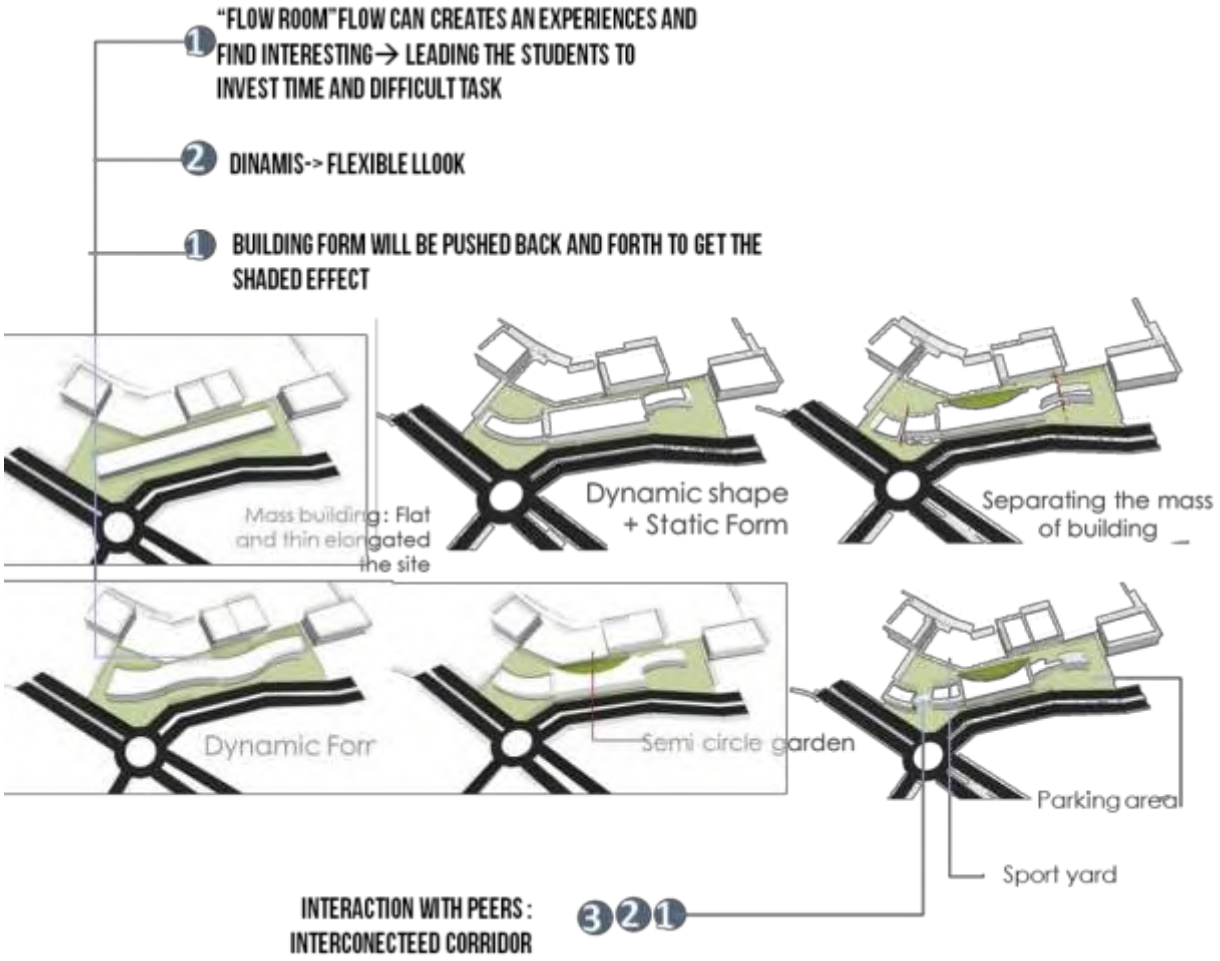
Site Circulation

Circulation on the site will be composed in such a way so as to reduce the congestion



Building Concept

The site that having many potential view, will represent a great challenges. The building will present great challenges. It will be part of "nature sequence"- A series of green open Areas made of natural and man made gardens

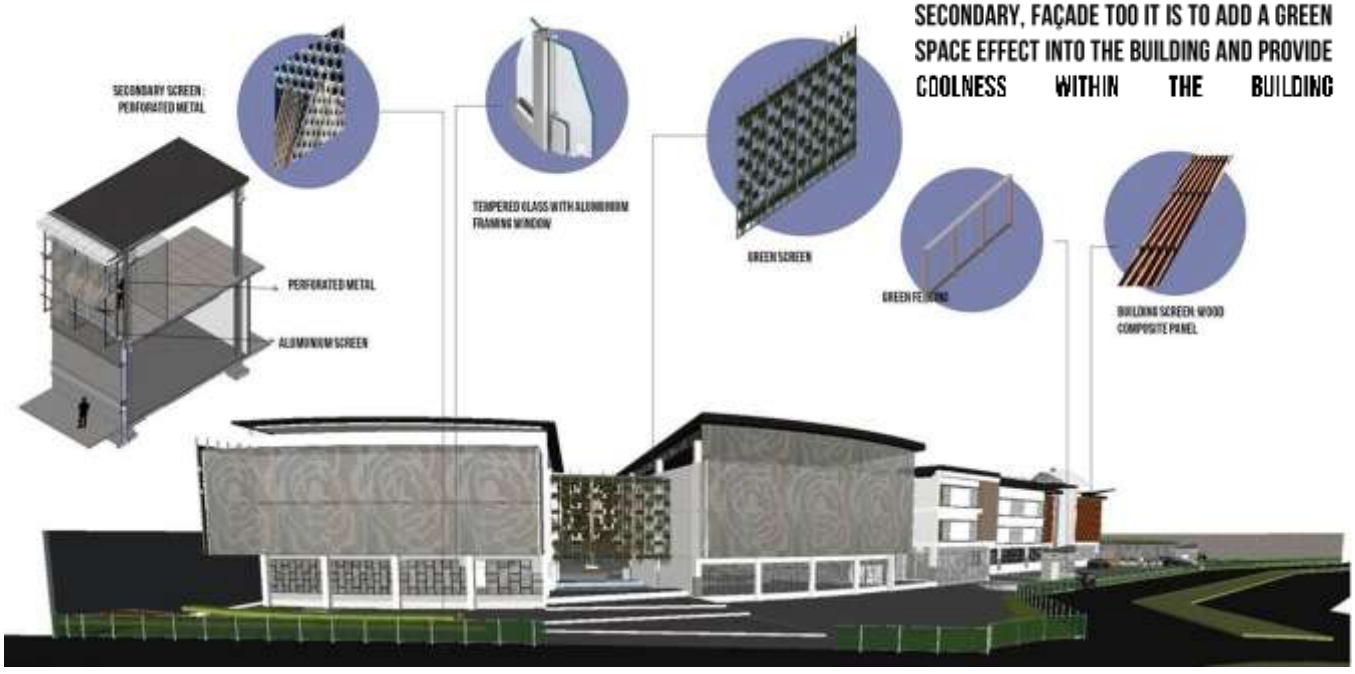


Building Material's Concept

BUILDING IS COVERED BY THE PERFORATED METAL AS THE SECONDARY SKIN TO GET THE NATURAL LIGHTING THROUGH ITS HOLE. BUT PREVENT THE LIGHTING GLARE. THE SKIN EASILY TO BE OPENED FULL PASSAGE OR JUST HALF PASSAGE WHEN STUDENTS HAVE THE ACTIVITIES IN THE SCHOOL'S BALCONIES

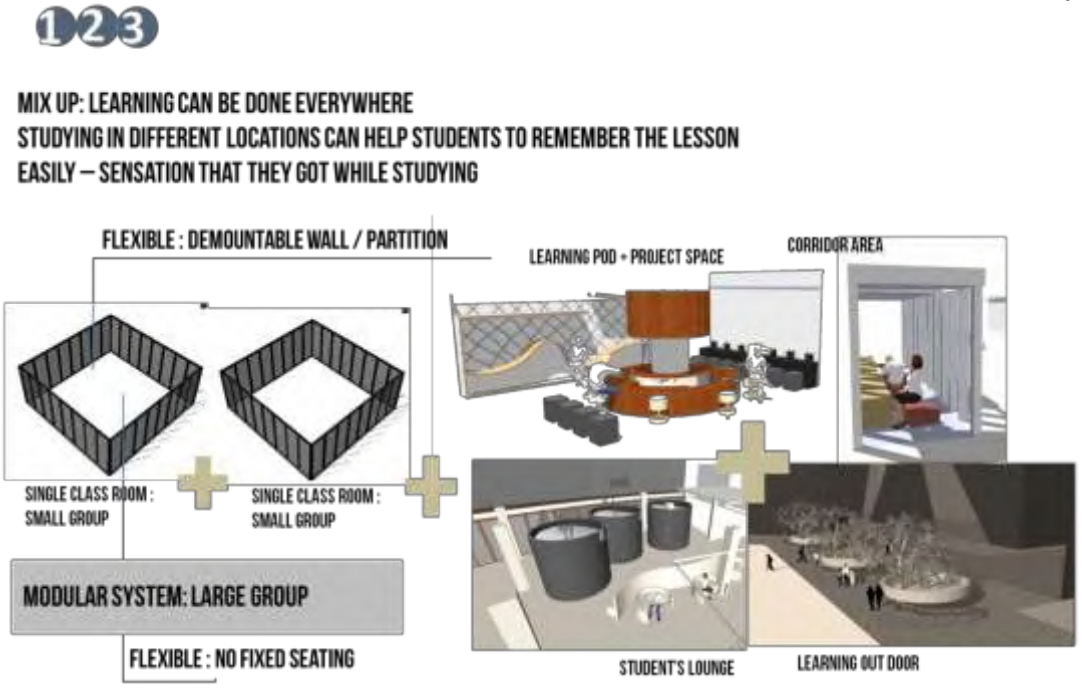
VENTILATION IN THE BUILDING IS USING TEMPERED GLASS FOR GIVING THE BEST SHADED EFFECT TO THE BUILDING

BUILDING FACADE IS COVERED BY GREEN SECONDARY, FAÇADE TOO IT IS TO ADD A GREEN SPACE EFFECT INTO THE BUILDING AND PROVIDE COOLNESS WITHIN THE BUILDING



Building Interior Concept

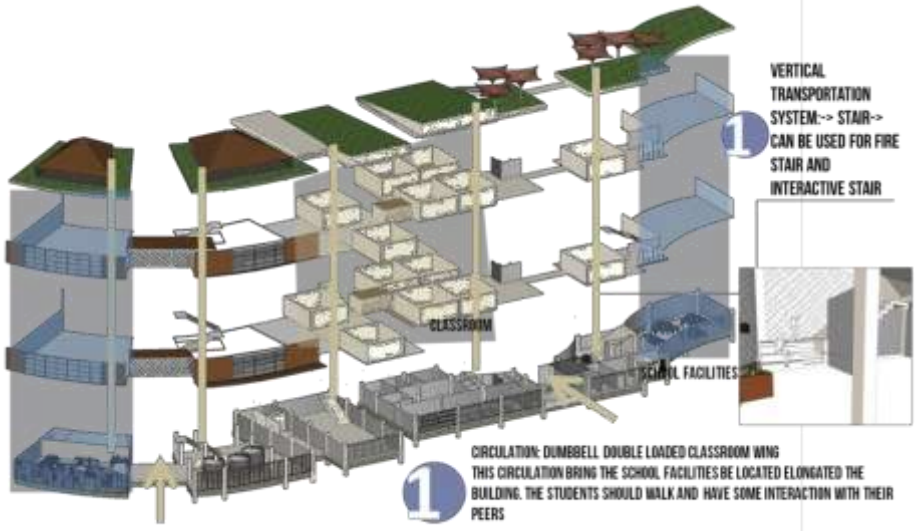
The Interior concept of the building will applied some fun detail of furniture, so that they can feel relax and comfortable there. They can fell free there to studying everywhere inside the school



SCHOOL DESIGN SHOULD FOCUS ON THE NEED FOR PHYSICAL SPACES TO SUPPORT TEACHING AND LEARNING. A PARTICULAR EMPHASIS MUST BE FLEXIBILITY. SPACES MUST BE CAPABLE OF SUPPORTING INDIVIDUAL LEARNING, AND FORMAL AND INFORMAL LEARNING, AS WELL AS COLLABORATIVE AND PROJECT WORK. DESIGN MUST ALSO SUPPORT THE INTEGRATION OF INFORMATION AND COMMUNICATIONS TECHNOLOGY INTO TEACHING PRACTICE.

Building Circulation Concept

The circulation inside the building is using the "2 wings system", where the student will move and walk along the building and have some interaction



Eco School Concept

The application of science and technology in buildings can be studied directly by students, and the building feels like a living museum. Would be applied application of conserving energy with solar panels and water treatment (water management) as well as waste management (waste management), also from gaps and minimizing natural ventilation new energy resource.

The student will learn the science natural environment through the building itself.

- Green house
- Water treatment rain water harvesting
- Heat gain from the solar panel

This system will allow user to grow and harvest fvertical garden and harvest fruits and vegetables. This system utilizes solar panels and a new bio/water wheel combination, to both provide better water quality and generate additional energy to power pumps, etc.

4.2 Technical Exploration Concept

STRUCTURE

The building will apply truss system (TRUSS-STRUCTURE). Structures that are used is beams and column steel s that work on the points of a regular building. The column used is a composite column which it will press reinforced structural components in the longitudinal direction with a steel girder profile or pipe, with given principal reinforcement rods lengthwise.

1. Material that has been building sustainable attitude (sustainable building).
2. The building consists of several materials include concrete as a wall coating of buildings that will be memorable unfinished building, will also be combined with more natural materials such as exposed brick or natural stone
3. Also use a lot of glass material was found on the walls of the classroom walls, so you can easily keep an eye on activities in the classroom.
4. Building materials must be safe for children, refractory / fire
5. Material channeling natural light into the building

Figure 4.2.1 truss structure
source : made in china.com

UTILITY

The utility will used the most safety one and some of the room will have the exposed utility (such as: laboratory), and some of them are not.

Utility room that will be exported to be used as a place to apply an understanding of electrical pipes and wires building

Figure 4.2.2 school˝s exposed utility
source : gsabusiness.com

CHAPER 5 : DESIGN
5.1 Formal Exploration Design

The Site

The Plan


NORTH FACADE
SCALE 1:400


EAST FACADE
SCALE 1:400


ROOF ATRIUM
INTERCONNECTED CORRIDOR
GREEN ROOF TOP
SOLAR PANEL
ASPHALT ROOF COVER
+10.15
+8.65
+5.15
+1.15


INTERCONNECTED CORRIDOR
GREEN ROOF TOP
GREEN ROOF
+10.15
+8.65
+5.15
+1.15

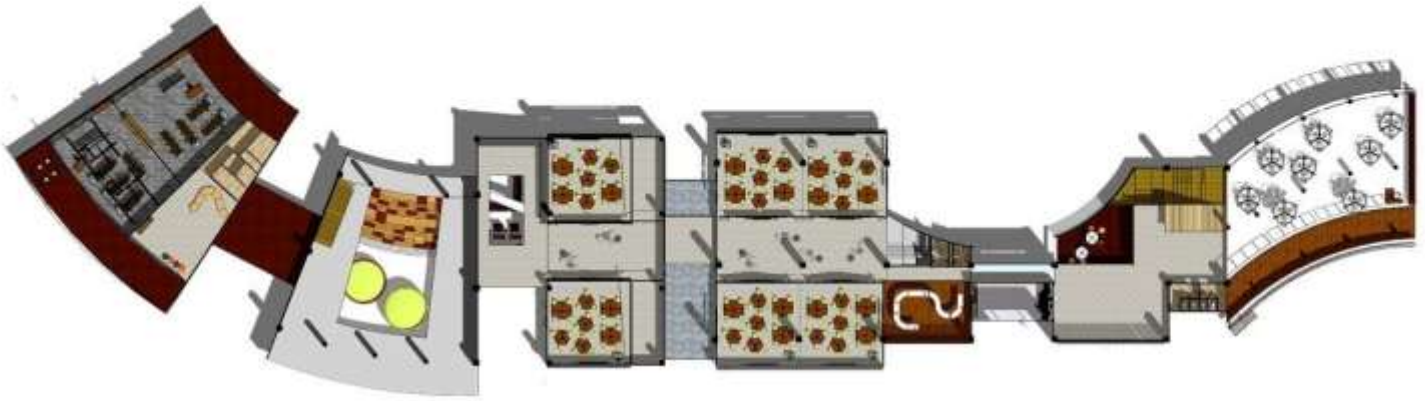
SECTION PLAN B-B'

SCALE 1:400

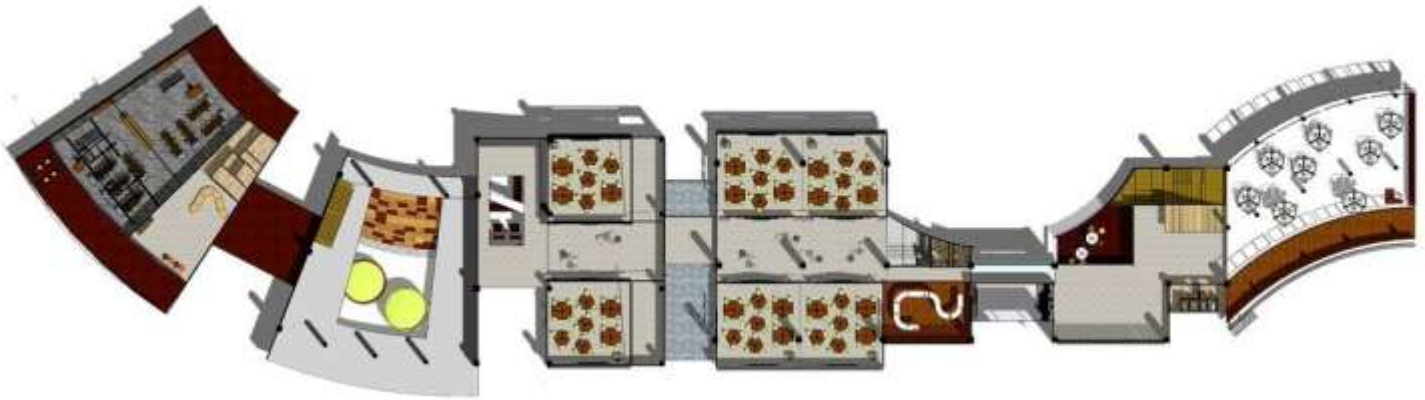
Building Form

Located in the suburb of Malang, this building creates a vibrant flexib
building that integrates with seamlessly in the landscape and commu
setting. The design approach was sustainable driven from the get go.

Floor Plan



1st Floor Plan



2nd Floor Plan

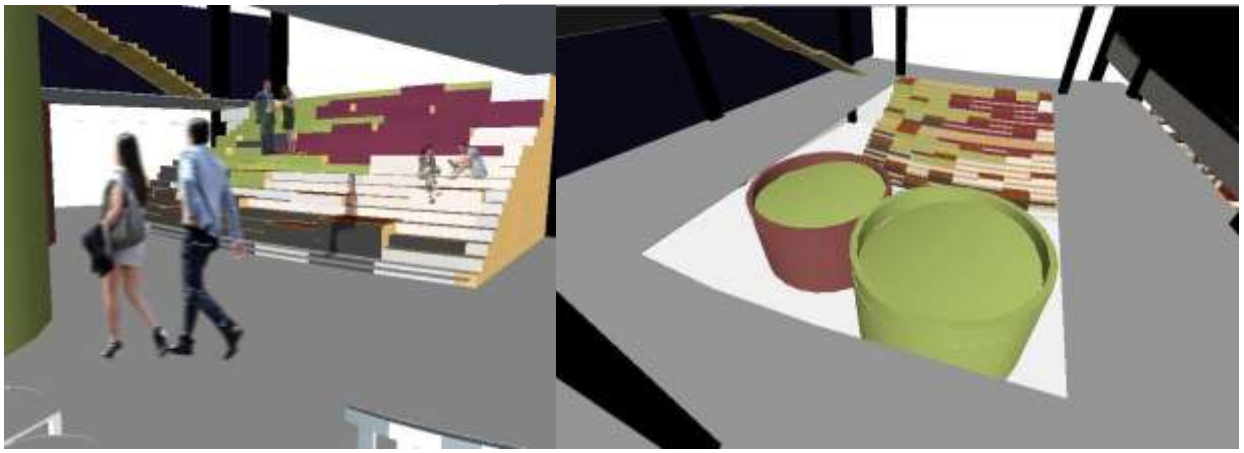
3rd Floor Plan

Interior

The Exhibitoon hall can be used as a multifunction room, where it can be used as conference meeting room, arts event, music events, and others event. The sliding door help the room space become a larger look

The cafetaria can be used as a learning place, where students can comfortably study there with their peers. The interior brings some colorful situation to give the spirit atmosphere to the room

The Classroom will have no fixed seating, they can have the flexible furniture. The furniture there can be moved easily according to the activity, whether it is needed large group of discussion and small group of discussion



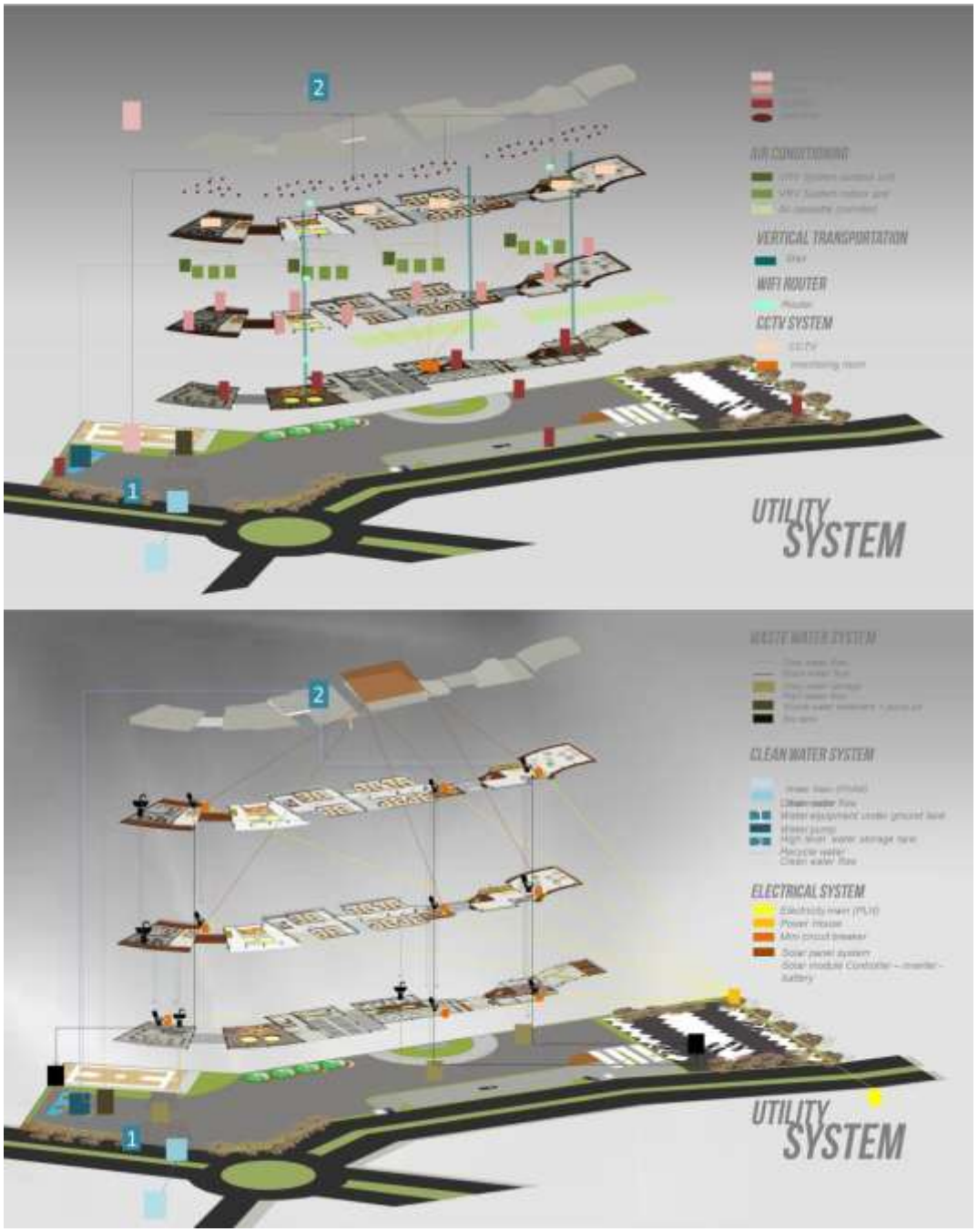
The Art room will be designed cretaive and imaginative look space

Landscape Scene

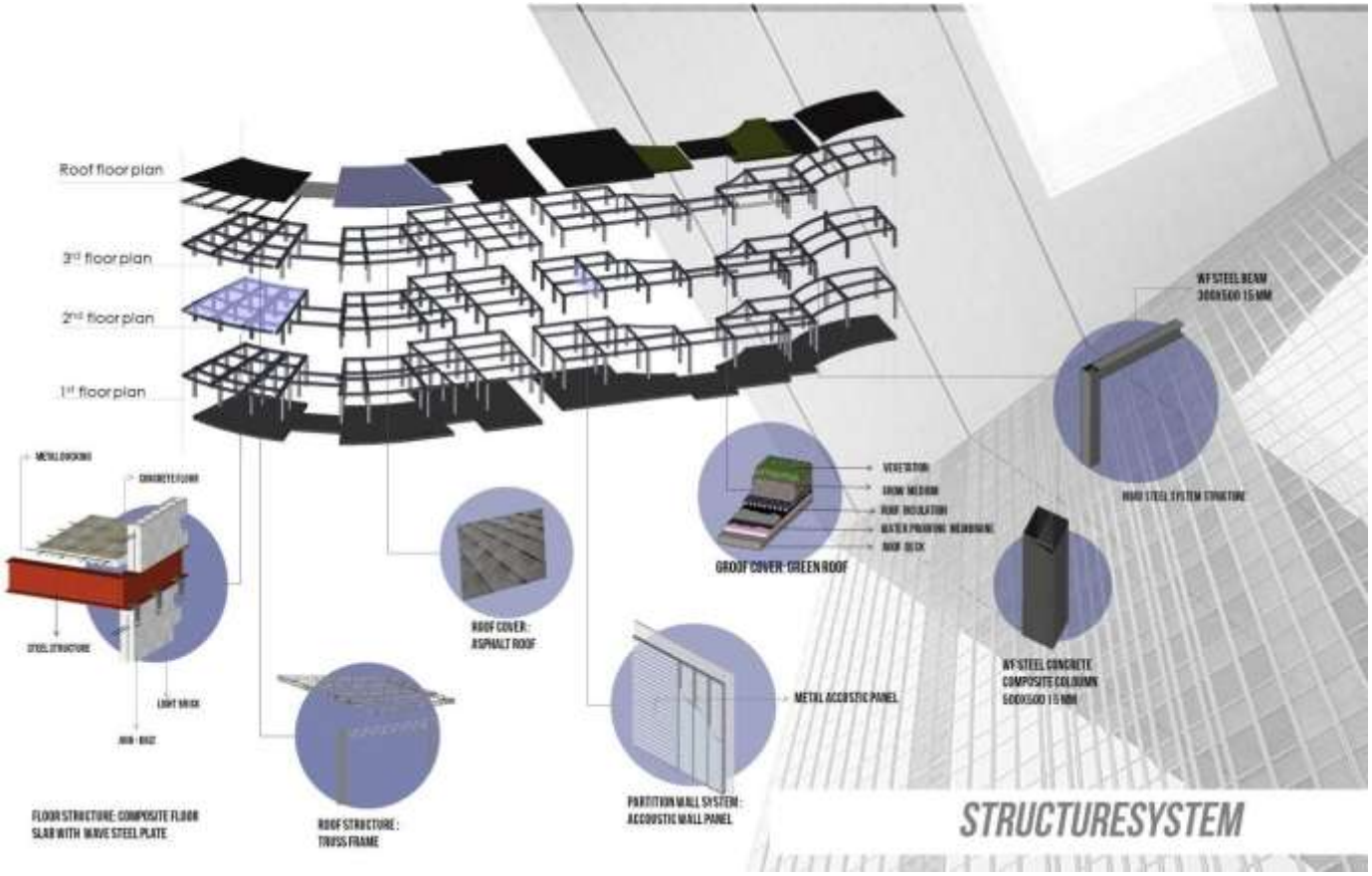
The site is giving natural sequence.
Some space will be used for comunal space

5.1 Technical Exploration Design

Utility System



Structure system



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CHAPER6: CONCLUSION

School is an educational unit that should answer all the students' needs to optimize their interest in learning, and cultivate their character. Schools must be able to accommodate everything they need to learn, ranging from learning, recreation and play - but most importantly, they feel that they are there.

Designing a flexible learning space and focuses on communities require a multidisciplinary approach, both from the physical campus buildings sustainable, advanced technology of the future, a new experience for the students. This holistic approach to educational design creates a dynamic learning community, and is based on strong relationships in school.

Trying to foresee students' future needs is not being trendy; it is a necessity. But, of course, it is only the beginning, The hard part are, first determining how there demands fit in relation to the existing curriculum, second, finding ways they can be taught along with content, and then, managing the complex process of implementation

Like the factious Paleolithic's in Benjamin's book, we may not be completely successful in these efforts, but must accept the challenge

Thankyou

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